

ABSTRACT OF THE DISCLOSURE

Chemical vapor deposition methods of forming titanium silicide comprising layers on substrates are disclosed. TiCl_4 and at least one silane are first fed to the chamber at or above a first volumetric ratio of TiCl_4 to silane for a first period of time. The ratio is sufficiently high to avoid measurable deposition of titanium silicide on the substrate. Alternately, no measurable silane is fed to the chamber for a first period of time. Regardless, after the first period, TiCl_4 and at least one silane are fed to the chamber at or below a second volumetric ratio of TiCl_4 to silane for a second period of time. If at least one silane was fed during the first period of time, the second volumetric ratio is lower than the first volumetric ratio. Regardless, the second feeding is effective to plasma enhance chemical vapor deposit a titanium silicide comprising layer on the substrate.